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EXAMINER	
TRUONG, CAM Y T	
ART UNIT	**PAPER NUMBER**
2162	

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/692,350	CUNNINGHAM ET AL.	
	Examiner	Art Unit	
	Cam Y T. Truong	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant has amended claims 1 and 8 in the amendment filed on 7/28/2006. Claims 1-14 are pending in this Office Action.

Response to Arguments

2. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that none of the prior arts of the record teaches the added claimed limitation " any type being extensible using an inheritance extension".

In response: a new ground of rejection is discussed in this office action.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-14 are rejected under 35 U.S.C.101 because the language of the claim raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practice application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C 101.

Claims 1-14 recite "a computer system or a hardware/software interface system". However, the claims fail to produce a concrete, useful, and tangible result so as to realize its functionality. Thus, the bodies of claims are merely abstract idea and are being processed without any links to a practical result in the technology arts.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3-8, 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy et al (or hereinafter "Murthy") (US 2005/0055355) in view of Schwarzhoff et al (or hereinafter "Schwarzhoff") (US 6591260).

As to claim 1, Murthy teaches the claimed limitations:

"a data store comprising a table of objects" as a relational database comprising a table of XML documents as objects (fig. 1);

"pre-computed values, the pre-computed values comprising information to discern objects based on type pursuant to a hierarchical search" as the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information

for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

"each object having an associated type in a hierarchy of types" as each document having a path type in a tree of types (figs 3C, 4, [0030]);

" each type having an identifier" as each path type has an identifier (fig. 4);

"a hardware/software interface system for manipulating the plurality of objects and pre-computed values" as a hardware/software interface system as shown in fig. 7is used to manage XML documents that is stored in a database [0021]).

Murthy does not explicitly teach the claimed limitation "being extensible using an inheritance extension".

Schwarzhoff teaches Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type (col. 2, lines 32-40).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Schwarzhoff's teaching Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type to Murthy's system in order to retrieve or access different types of documents in a database system quickly and further improve the performance of data extraction and further to allow document types to evolve in order to facilitate new transactions, while preserving the integrity of the existing document types and the transactions they

support.

As to claims 3 and 10, Murthy teaches the claimed limitation "wherein a type can be a subtype of another type" as (fig. 4)

As to claims 4 and 11, Murthy teaches the claimed limitation "wherein the data store further comprises a type path for each object" as (figs. 4&5, page 4, paragraph [0048, 0040]);

As to claims 5 and 12, Murthy teaches the claimed limitation "wherein the data store comprises a computed column for storing each type path" as (page 2, [0024]).

As to claims 6 and 13, Murthly teaches the claimed limitations " wherein each type path comprises a variable-length encoded value" as (page 3, [0026]).

As to claims 7 and 14, Murthy teaches the claimed limitations" wherein each variable-length encoded value corresponds to a hierarchy level of the type of the associated object" as (page 3, paragraph [0026, 0030]).

As to claim 8, Murthy teaches the claimed limitations

"a hardware/software interface system capable of manipulating a plurality of objects" as a hardware/software interface system as shown in fig. 7is used to manage

XML documents that is stored in a database [0021]);

"pre-computed values; pre-computed values comprising information to discern objects based on type pursuant to a hierarchical search" as the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

"the objects and pre-computed values comprises within a table" as XML documents and document identifiers as values are stored in a table of relational database (fig. 2&5, paragraph [0033]),

"each object having an associated type in a hierarchy of types" as each document having a path type in a tree of types (figs 3C, 4, [0030]);

" each type having an identifier" as each path type has an identifier (fig. 4).

Murthy does not explicitly teach the claimed limitation "being extensible using an inheritance extension".

Schwarzhoff teaches Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type (col. 2, lines 32-40).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Schwarzhoff's teaching Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type to Murthy's system in order to retrieve or access different types of documents in a database system quickly and further improve the performance of data extraction and further to allow document types to evolve in order to facilitate new transactions, while preserving the integrity of the existing document types and the transactions they support.

7. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being upatentable over Suver (US 6016497) in view of Murthy and further in view of Shwarzhoff.

As to claim 1, Suver teaches the claimed limitations:

"a data store comprising a table of objects" as storing data items as objects in a database (col. 9, lines 15-45);

"each object having an associated type in a hierarchy of types" as different types of data items indicate each item having an associated type (col. 9, lines 50-52);

" each type having an identifier" as a column data type identifier and text type identifier (col. 9, lines 24-25; col. 10, lines 66-67);

"a hardware/software interface system for manipulating the plurality of objects" as a hardware/software interface system as shown in fig. 1 is used to execute data items that is stored in a database (col. 4, lines 5-15; col. 5, lines 62-67; col. 6, lines 20-50).

Suver does not explicitly teach the claimed limitation "pre-computed values comprising information to discern objects based on type pursuant to a hierarchical search; pre-computed values; being extensible using an inheritance extension".

Murthy teaches the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

Schwarzhoff teaches Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type (col. 2, lines 32-40).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Schwarzhoff's teaching Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type Murthy's teaching of XML documents and document identifiers as values are stored in a table of relational database and the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22,

hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d to Suver's system in order to retrieve or access different types of documents in a database system quickly and further improve the performance of data extraction and further to allow document types to evolve in order to facilitate new transactions, while preserving the integrity of the existing document types and the transactions they support.

As to claims 2 and 9, Suver teaches the claimed limitation "wherein each type is a user-defined type (UDT)" as user defined types (col. 4, lines 6-10).

As to claims 3 and 10, Suver teaches the claimed limitation "wherein a type can be a subtype of another type" as (col. 20, lines 1-10).

As to claims 4 and 11, Suver teaches the claimed limitation "wherein the data store further comprises a type path for each object" as (col. 4, lines 6-20).

As to claims 5 and 12, Suver discloses the claimed limitation subject matter in claim 1, except the claimed limitation "wherein the data store comprises a computed column for storing each type path". Murthy teaches storing XML documents columns of

relational database table (page 2, [0024]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of storing XML documents in existent or newly created columns of relational database to Suver in order to increasing the flexibility and power with which the data may be accessed, it also increases the complexity of the application, both from the perspective of the designer and the perspective of the user and to access data using the relatively simple OS file API.

As to claims 6 and 13, Suver discloses the claimed limitation subject matter in claim 1, except the claimed limitations " wherein each type path comprises a variable-length encoded value".

Murthy teaches path varchar corresponding level of the type of the object (page 3, paragraph [0026, 0030]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of path varchar to Surve's system in order to provide an application for storing XML documents in existent or newly created columns of a relational database table or in external files.

As to claims 7 and 14, Surve discloses the claimed limitation subject matter in claim 1, except the claimed limitations" wherein each variable-length encoded value corresponds to a hierarchy level of the type of the associated object". Murthy teaches

path varchar corresponding level of the type of the object (page 3, paragraph [0026, 0030]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of path varchar to Surve's system in order to provide an application for storing XML documents in existent or newly created columns of a relational database table or in external files.

As to claim 8, Suver teaches the claimed limitations

"a hardware/software interface system capable of manipulating a plurality of objects" as shown in fig. 1 is used to maintain data items that is stored in a database (fig. 14, col. 4, lines 5-15; col. 5, lines 62-67; col. 6, lines 20-50).

"each object having an associated type in a hierarchical of types" as different types of data items indicate each item having an associated type (col. 9, lines 50-52);

" each type having an identifier" as a column data type identifier and text type identifier (col. 9, lines 24-25; col. 10, lines 66-67).

Suver does not explicitly teach the claimed limitation "pre-computed values, pre-computed values comprising information to discern objects based on type pursuant to a hierarchical search; pre-computed values; the objects and pre-computed values comprised with a table; being extensible using an inheritance extension".

Murthy teaches XML documents and document identifiers as values are stored in a table of relational database (fig. 2&5, paragraph [0033]). Murthy further teaches the document identifier refers to the document identifier that is assigned to the XML

documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

Schwarzhoff teaches Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type (col. 2, lines 32-40).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Schwarzhoff's teaching Polymorphism allows a document type to be explicitly defined as an extension of a pre-existing document type and Murthy's teaching of XML documents and document identifiers as values are stored in a table of relational database and the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding

to the location path "/a/b/c/d". XPath: /a/b/c/d to Suver's system in order to retrieve or access different types of documents in a database system quickly and further improve the performance of data extraction and further to allow document types to evolve in order to facilitate new transactions, while preserving the integrity of the existing document types and the transactions they support.

9. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being upatentable over Suver (US 6016497) in view of Murthy and further in view of Seyrat et al (or hereinafter "Seyrat") (US 2004/0068696).

As to claim 1, Suver teaches the claimed limitations:

"a data store comprising a table of objects" as storing data items as objects in a database (col. 9, lines 15-45);

"each object having an associated type in a hierarchy of types" as different types of data items indicate each item having an associated type (col. 9, lines 50-52);

" each type having an identifier" as a column data type identifier and text type identifier (col. 9, lines 24-25; col. 10, lines 66-67);

"a hardware/software interface system for manipulating the plurality of objects" as a hardware/software interface system as shown in fig. 1 is used to execute data items that is stored in a database (col. 4, lines 5-15; col. 5, lines 62-67; col. 6, lines 20-50).

Suver does not explicitly teach the claimed limitation " the pre-computed value comprising information to discern objects based on type pursuant to a hierarchical

search; pre-computed values; and being extensible using an inheritance extension".

Murthy teaches the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

Seyrat teaches using an inheritance extension (paragraph [0142]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d and Seyrat's teaching of using an inheritance extension to Suver's system in order to retrieve or access different types of

documents in a database system quickly and further improve the performance of data extraction and further to allow document types to evolve in order to facilitate new transactions, while preserving the integrity of the existing document types and the transactions they support.

As to claims 2 and 9, Suver teaches the claimed limitation "wherein each type is a user-defined type (UDT)" as user defined types (col. 4, lines 6-10).

As to claims 3 and 10, Suver teaches the claimed limitation "wherein a type can be a subtype of another type" as (col. 20, lines 1-10).

As to claims 4 and 11, Suver teaches the claimed limitation "wherein the data store further comprises a type path for each object" as (col. 4, lines 6-20).

As to claims 5 and 12, Suver discloses the claimed limitation subject matter in claim 1, except the claimed limitation "wherein the data store comprises a computed column for storing each type path". Murthy teaches storing XML documents columns of relational database table (page 2, [0024]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of storing XML documents in existent or newly created columns of relational database to Suver in order to

increasing the flexibility and power with which the data may be accessed, it also increases the complexity of the application, both from the perspective of the designer and the perspective of the user and to access data using the relatively simple OS file API.

As to claims 6 and 13, Suver discloses the claimed limitation subject matter in claim 1, except the claimed limitations " wherein each type path comprises a variable-length encoded value".

Murthy teaches path varchar corresponding level of the type of the object (page 3, paragraph [0026, 0030]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of path varchar to Surve's system in order to provide an application for storing XML documents in existent or newly created columns of a relational database table or in external files.

As to claims 7 and 14, Surve discloses the claimed limitation subject matter in claim 1, except the claimed limitations" wherein each variable-length encoded value corresponds to a hierarchy level of the type of the associated object". Murthy teaches path varchar corresponding level of the type of the object (page 3, paragraph [0026, 0030]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Murthy's teaching of path varchar to Surve's system

in order to provide an application for storing XML documents in existent or newly created columns of a relational database table or in external files.

As to claim 8, Suver teaches the claimed limitations

"a hardware/software interface system capable of manipulating a plurality of objects" as shown in fig. 1 is used to maintain data items that is stored in a database (fig. 14, col. 4, lines 5-15; col. 5, lines 62-67; col. 6, lines 20-50).

"each object having an associated type in a hierarchical of types" as different types of data items indicate each item having an associated type (col. 9, lines 50-52);

" each type having an identifier" as a column data type identifier and text type identifier (col. 9, lines 24-25; col. 10, lines 66-67).

Suver does not explicitly teach the claimed limitation "pre-computed values, the pre-computed values comprising information to discern objects based on type pursuant to a hierarchical search; pre-computed values; the objects and pre-computed values comprised with a table; being extensible using an inheritance extension ".

Murthy teaches XML documents and document identifiers as values are stored in a table of relational database (fig. 2&5, paragraph [0033]). Murthy further teaches the document identifier refers to the document identifier that is assigned to the XML documents. Each XML document will have a unique DOCID value. PID refers a unique identifier for a path. At 220 and 22, hierarchical information and type/value information for the node is stored in the entry for the node in the Path_table. The hierarchical information for the XML data is tracked by viewing the XML document as

a tree. The following example XPath expression searches for the content(s) of one or more XML fragments corresponding to the location path "/a/b/c/d". XPath: /a/b/c/d. The above information shows that each value of each document to identify each document based on a path type to a hierarchical search (page 2, [0025]; page 3, [0030]; page 5, [0064]).

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9. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Murthy in view of Schwarzhoff and further in view of Chau et al (or hereinafter "Chau") (US 6643633).

As to claims 2 and 9, Murthy does not explicitly teach the claimed limitation "wherein each type is a user-defined type (UDT)". Chau teaches user defined types (col. 8, lines 30-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Chau's teaching of UDT to Murthy's system in order to provide powerful user-defined function to store and retrieve XML documents in XML columns as well as to extract XML element/attribute values.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

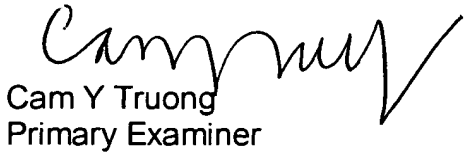
Sulistio (US 20060156224)

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam Y T. Truong whose telephone number is (571) 272-4042. The examiner can normally be reached on Monday to Firday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Cam Y Truong
Primary Examiner
Art Unit 2162
8/28/2006